Tiffen®

FILTER MANUAL

for Black and White and Color Films

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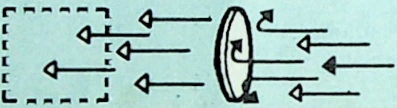
price
15¢

incorporating new DECAMIRED COLOR FILTER SETS

WHY FILTERS? These are the most important of photographic tools, both from a creative and a corrective point-of-view. They make *you* master of every situation, for with filters, you can transform light source values so that flashbulbs' light reaches your film with the characteristics of daylight . . . or daylight magically becomes indoor flood light or, simply, they can make your picture *look more realistic!* With panchromatic film, the filter can make clouds appear virtually out of nowhere . . . or penetrate haze as though it weren't there. Filters can see things your eye can . . . but your film can't! There is no end to Filter-Magic, and this booklet hopes to acquaint you with but a taste of it.

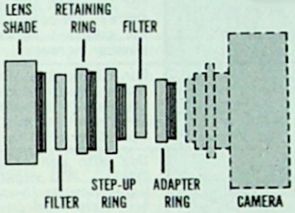


As the illustration above graphically points out, filters absorb some color, and let other color pass through. The selection of the particular filter type determines what color passes, and what doesn't. As an example, a yellow filter lets the red and green in daylight pass through to the film, thereby appearing as a light area, on the prints. On the other hand, part of the blue light is absorbed, or blocked, thereby making the blue of the sky appear darker . . . the result being a more contrastly cloud effect.

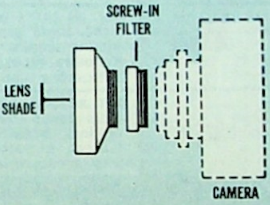
This booklet talks about filters in general, though Tiffen manufactures two types, HI-TRANS® and PHOTAR®. The HI-TRANS performs essentially in the same manner as PHOTAR, but it is hard T-coated to eliminate light reflections and flare, and to provide maximum transmission of the portion of the color that the filter is designed to pass. Also, it is bound in a COLORIM® which is colored the same as the filter, for instant identification. But both are THERMO-BONDED, ground and polished, and Guaranteed-for-Life. Both represent the ultimate achievement in filter making, and are the choice of government agencies and pro's the world over!

HOW TO USE Tiffen FILTERS ON YOUR CAMERA . .

STANDARD SERIES filters are made in sizes to fit all cameras, still and movie, and can be interchanged for all the cameras in your household or studio. They simply fit into the adapter ring Tiffen makes for your camera, and are held firmly by a retaining ring, or lens shade which is recommended at all times.

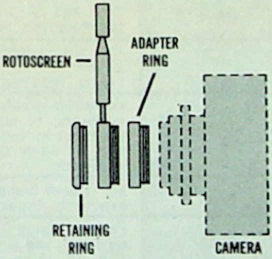


SCREW-IN filters are threaded to fit directly into the lens mount on your camera, and can remain on the camera even with your camera case closed. They are made for all popular models, and accept additional filters, or other lens accessory, in their similar front thread. Lens shades are made to slip-over or screw into the filter.

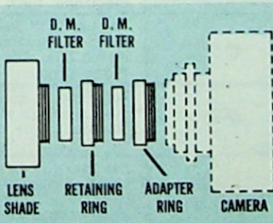


TIFFEN-POLAROID® filters are made in standard series sizes, as above, or in the TIFFEN-POLAROID FILTER ATTACHMENT called "Rotoscreen." This is a rotating polarizing unit, which screws into your Tiffen Adapter Ring, and has a special viewing arm for easy use. See pages 8 and 9 for complete information about the use of Tiffen Polaroid Filters (Polarizers) and Rotoscreens.

Polaroid® Polaroid Corp.



TIFFEN DM (DecaMired) filters are a new concept in filters for color films. Available as complete sets, they are used in combination with each other to solve all light balancing problems. See pages 6 and 7 for more DM Filter data.



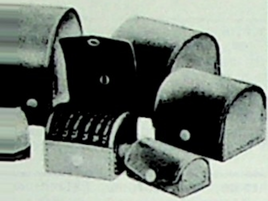
For BLACK & WHITE Films

YELLOW 1	For all black and white films. Absorbs excess blue, outdoors thereby rendering moderate tonal correction, and emphasis o the contrast between sky and clouds. Requires ½ stop exposure increase.
YELLOW 2	For all Black & White films. Like the Yellow 1 filter, absorb blue, but to a greater degree, thereby rendering the mos accurate tonal correction outdoors, and producing even greate contrast of clouds against blue skies. Increase exposure tim by 1 stop.
RED 1	Use with pan or infra-red films, to achieve maximum "contrasts". Will create dramatic sky effects, simulated "moonlight" scenes in mid-day (by slight under-exposure). Cuts thr fog, haze, and mist, by absorbing the excessive blue in th ultra-violet light present. Excellent copying filter. Increas exposure by 3 stops, or 2 stops with tungsten light.
ORANGE	For all black and white films. Absorbs ultra-violet and blue light, thereby making blue tones appear darker. Excellent fo marine scenes, and aerial photography. Excellent copying filter Requires exposure increase of 1½ stops with pan, 2½ stops with ortho, approximately half this increase in tungsten light
GREEN 1	For all pan films. Ideal outdoor filter where more pleasing flesh tones are desired in portraits against the sky. Also renders beautiful black and white photos of landscapes flowers, blossoms, and natural sky appearance. Requires one stop exposure increase.

For COLOR FILM

HAZE 1	For all daylight color films. Reduces excess blue caused by haze and ultra-violet rays. Increases warmth of picture, ideal for mountain, aerial and marine scenes. No exposure increase.
HAZE UV 2A	For all daylight color films. Use like Haze #1, but gives greater UV correction, thus warmer results. No exposure increase required.
SKYLIGHT 1A	For all daylight color films. Recommended for use at all times, outdoors, to reduce excess blue and add warmth to scene. Ideal for mountain. aerial, marine. sky and snow scenes. Also use in open shade to reduce blue. No exposure increase required.
#83	For 16mm Commercial Kodachrome Film. Converts to daylight exposure. Exposure index: 10.
#85 (Ansco #11)	Permits using Type A Kodachrome and Anscochrome Tung. in daylight, and acts as haze filter at same time. Exposure index: ASA 10. Also use with Kodacolor as correction filter for electronic flash. Exposure index: 12.
#85B	For use with Super Anscochrome T and Ektacolor Type B films. Permits shooting in daylight, by reducing bluish daylight to match film. Exp. Index: Super Anscochrome T, 80; Ektachrome B and Ektacolor B, no increase.
#85C	For Type F Kodachrome. Anscochrome and Ektachrome. Permits shooting with Type F films in daylight, and reduces haze simultaneously. Exposure index: Kodachrome F, 10; Anscochrome F, 25; Ektachrome F, 20.

#80C (2-D Flash)	chrome, as with 1-D Flash filter, but where somewhat c results are desired. Excellent outdoors in early AM or afternoon, where flash is main source of light. Exposur crease of 1 stop is required.
1-D Flash	For use with Daylight Kodachrome, Anscochrome and chrome, with all flash lamps (except SM and SF). Use out or in deep shade where flash is main source of light. Inc exposure by 1 stop.
#81	For use with Type F Kodachrome, Anscochrome, Ektachr with M2 Flash Bulbs.
#81A	Use with Daylight Kodachrome, Ektachrome and Super A chrome, when using electronic flash light source. Inc exposure approximately ⅓ stop. Use with Type B Ektach and Ektacolor, or Super Anscochrome T when using photof (3400°). Type B Ektachrome and Ektacolor, exposure inc ⅓ stop; Super Anscochrome T, use ASA 100.
#81B	Use with Ektachrome Type B film. Permits using spotligh white fluorescent lamps (3500°) with this 3200° film. Inc exposure ⅓ stop.
#81C	For use with Kodachrome Type A film. Permits using flash lamps (except SM or SF). Exposure increase ⅓ sto
#81D	For use with Super Anscochrome T, Ektachrome Type clear flash lamps (except SM or SF). For use with Kodach Type A, as with #81C, but for somewhat warmer re Exposure increase ⅔ stop.
#81EF	For Kodachrome Type A. Permits use of M-2 Flash Lamps Type A Film. Use whenever a 650°K drop is required. Exp Increase ⅔ stop.
#82A	For Daylight Type Kodachrome, Anscochrome, Ektachrom Kodacolor, in early AM or late afternoon, to reduce exce red in light. Also use with Type A Kodachrome and A chrome Tung with 3200° lamps. Exposure increase of ⅓ With Type F Kodachrome, Anscochrome and Ektachrome, using photo floods (Exposure index: Kodachrome, AS Anscochrome, ASA 20; Ektachrome, ASA 16).
#82B	Use with Type F Kodachrome, Anscochrome and Ektach with SM or SF flash lamps. Increase exposure by ⅔ sto
#82C	For use with Kodacolor, Type F Kodachrome, Anscochrom Ektachrome, with 3200° Kelvin lamps. Exposure increas quired is ⅔ stop.
Conversion #12	For Anscochrome Tungsten, when using high speed elec flash. Follow mfgr's recommendations for exposure inc
#UV-15	For Daylight Anscochrome, to achieve slight haze corre Also use with Anscochrome Tung (3200°), when using floods. No increase of exposure.
#UV-16	For use with Daylight Anscochrome, with high speed elec flash. Reduces haze and absorbs bluish cast. No increa exposure.
#UV-17	For Daylight Anscochrome. Use for greater haze corre particularly useful in aerial, mountain, marine and sky s Excellent for portraits in shady areas, to reduce blue No exposure increase.
#CC30R	For All Color Film. To compensate for distortion of color shooting through transparent plastic windows similar to domes provided by railroads for camera fans. Exposu crease Daylight Color, Top Windows 2⅔ Stops. Side Wi



DECA-MIRED FILTERS ™

A new filter concept

DECAMIRED FILTERS answer all color balancing and conversion filter problems . . . this is the **only** combination of filters that can be used in multiples . . . that will never be out-dated regardless of changes in film or light source color temperature. Once you have DM Filters . . . you are filter-fixed for life! The only other filters you will ever need are those for special tasks, such as "close-ups", or "neutral density", or "skylight", or for Black and White film. DM Filters, because they effect the same degree of color temperature change at any point in the Kelvin scale, can be used singly, or can be added to each other to achieve the desired degree of change required for the film/light source combination you are using.

HOW DOES DM WORK?

Basically, there are two filter series:

#81 series . . . Reddish in color, used to **lower** the color temperature of the light source, hence known as "warming filters".

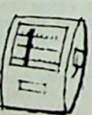
#82 series . . . Bluish in color, used to **raise** the color temperature of the light source, hence known as "cooling filters".

But, these ordinary filters present an inherent problem, that is; they cannot be used in combinations because their degree of effect on color temperature varies at different color temperature levels. For example, an 82C filter used at 3200° would raise the color temperature 400°, but at 5500° it would effect an increase of 550°.

THAT'S WHERE DM COMES IN!

DM Filters consist of two sets of filters. Three degrees of warmth, or reddish color, and known as **R3, R6, and R12**; and three degrees of coolness, or bluish color, known as **B3, B6 and B12**. Because R3 and R6, used in combination, always equal R9, it is easy to see how an unlimited number of R or B combinations can be employed, for any conditions that may prevail, with present or future film characteristics.

WHAT IS THE PRINCIPLE BEHIND DM?



DM Filters employ a new light balancing principle, based on the reciprocal of the color temperature. Hence, the DM value of Daylight Kodachrome, balanced for 5500° Kelvin, is:

5500° ÷ into 1,000,000 = 181 Mireds
181 Mireds ÷ by 10 = 18 DecaMireds
(the fraction is dropped)

Likewise, the DecaMired Value of all films or light sources can be determined. For practical purposes, the chart in this folder lists all popular DM values. For greatest accuracy, however, a Color Temperature Meter calibrated in DecaMired is strongly recommended.

HOW TO USE DM FILTERS?

It's simple! Merely refer to the DM table in this folder, or determine the DM value of your light source by Color Temperature Meter. **Subtract** the DM value of the light source from the DM value of the film! The difference is the required DM Filter value. The sign value of the result of your subtraction determines whether to use R series or B series. A minus value indicates the need for cooling, or B filters. Plus indicates warming or R filters . . .

FOR EXAMPLE:

Let the film be rated at 5500°K = 18 DM
The light source at 3300°K = 30 DM
Subtract the light source value (30 DM), from the film value (18 DM):

$$18 - 30 = -12$$

This means a minus, or B12 filter is needed. If the resultant value is such that no combination of filters equals it exactly (B and R cannot be inter-mixed, naturally), use the next lowest filter combination you can make. **Example,** for a −14, use B12. For a +10, use R9.

FILM TYPE & LIGHT SOURCE GUIDE

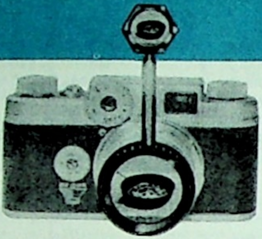
FILM TYPE	COLOR TEMP. (Degrees Kelvin)	DM VALUE
Anscochrome Ektachrome Kodachrome	5500	18
Anscochrome F Ektachrome Type F Kodachrome Type F	3800	26
Anscochrome Tungsten Kodachrome Type A	3400	29
Ektachrome Type B Super Anscochrome T	3200	31

LIGHT SOURCE (Average Rating)	COLOR TEMP. (Degrees Kelvin)	DM VALU
3200° Flood Lamps	3200	31
SM & SF Flash Lamps	3300	30
Photoflood Lamps	3400	29
White Fluorescents	3500	28
Clear Flash Lamps	3800	26
Blue Flash Lamps	6000	16
Electronic Flash ·	6500	15
Average Sunlight (9 A.M.-3 P.M.)	5500	18
Sunlight (other times)	5000	20
Hazy Blue Sky	9000	11
Clear Blue Sky	25,000	4

DM EXPOSURE INCREASE GUIDE

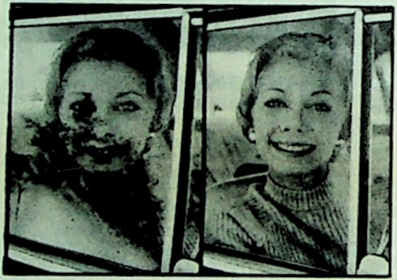
R SERIES	F-STOP	B SERIES	F-STOP
R3	⅓	B3	½
R6	½	B6	1
R3 + R6 = R9	⅚	B3 + B6 = B9	1½
R12	1	B12	2
R12 + R3 = R15	1⅓	B12 + B3 = B15	2½
R12 + R6 = R18	1½	B12 + B6 = B18	3

Tiffen®



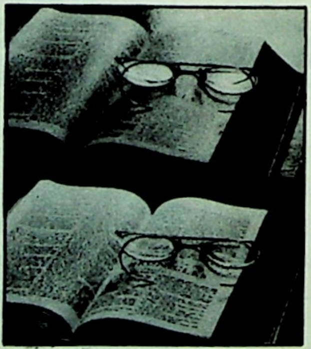
. . . you see the results before you shoot!

No single other filter does so many things with color **and** black and white films, as the Tiffen-Polaroid Polarizer. This is a genuine light polarizing filter that is **universal** – the one and only filter that's always correct, that can be used alone or in combination with itself or with other filters. With the Tiffen ROTOSCREEN Universal Attachment, which combines the Tiffen-Polaroid Polarizer in a rotating mount, and with a corresponding viewer attachment, you see the exact results each and every time **before** you shoot. Use 2½ times exposure increase.



Without Polaroid **With Polaroid**

Without the Tiffen-Polaroid Polarizer, the window reflects other than the desired subject, completely hiding the person behind it.



Without Polaroid

With Polaroid

All the detail and true surface texture are retained by simply using a Tiffen-Polaroid Polarizer.

POLAROID® POLARIZERS

FOR OUTDOOR SHOTS

Darkens blue skies and brings out the white clouds by increasing contrast. This is the only filter that effectively cuts thru haze, and creates brilliant skies without diluting the COLOR of surrounding foliage, shrubery, grass, etc.

WATER REFLECTIONS

Brilliant sunlight or artificial light on water obscures detail with patch of white glare. This is particularly annoying in seascapes or other outdoor scenes. This is the only filter that reveals all surface and sub-surface detail, and reflects true COLOR values.

PHOTOS THRU GLASS

As in the case of photographing thru water, or against any highly reflective non-metallic subject, this is the only filter that eliminates detail-destroying glare. Now you can photograph through glass surfaces as though there weren't any glass there at all.

COLOR AND TEXTURE

Glaring light hides subtle textures, and greatly dilutes and washes-out the color of marble, furniture, wet street, printed or written paper, paintings, fabric, foliage or other non-metallic surfaces. This is the essential filter for copy photography or where these conditions exist.

FOR MOVIES

With the use of a Rotoscreen with another Tiffen-Polaroid Polarizer, a professional fade-and-dissolve unit is available for use with all movie cameras, with color as well as black and white films. By superimposing a fade-in and a fade-out, you get professional appearing movies. Use 3½ times exposure increase.

Polaroid® Polaroid Corp.

WHY CLOSE-UP LENSES?

Tiffen Close-Up Lenses are inexpensive auxiliary lenses that are place in front of any camera lens to enable it to focus at close distance In so doing, this simple accessory greatly increases the versatility o any camera and makes truly professional results possible with any camera in an increased range of subject matter. The advantages are man whether you use movies or still, black and white or color.

WHAT ARE THEY?

Tiffen Close-Up lenses are supplementary lenses that are used together with your camera lens. Placed in front of the camera lens, they change the effective focus so that you can get closer to your subject and still get sharp pictures. Actually, they function as an additional lens element to effectively shorten the focal length of the lens. Supplied in various strengths, Tiffen Close-Up lenses offer you an extended focusing range reaching from the usual 3½ ft. or so limit of your camera all the way down to just a few inches. These strengths are measured in Plus (+) Diopters and calibrated as +1, +2, +3, +4, +5, +6, +10. The greater the diopter power, the closer focusing range made possible. Tiffen Close-Up lenses +1, +2, +3 are available in 21.5mm, Series #4, #5, #6, #7, #8 and #9 sizes. The extra strong diopter lenses are supplied only in Series #5, #6, #7. Inasmuch as the close-up lens is used as an integral part of the lens system, it is important to use only those of good quality. Tiffen Close-Up lenses are made of true ground and polished optical glass and Tiffen manufacturing standards are such that any two may be used as a matched set on all twin-lens reflex cameras.

WHAT THEY DO FOR YOU

The extended focusing range, made possible with so little effort with close-up lenses, opens the way to many picture opportunities. Any camera, equipped with a +1 lens, becomes a portrait camera capable of top quality results. That professional touch appears as all extraneous background is eliminated and the entire negative area is filled with bust or head only. This application of +1 close-up lenses is so popular that this lens is often referred to as a Portrait lens.

The same technique — with the same ease — is used to make close-ups. This classification is truly broad; some examples are pictures of lowers, art objects like a vase, component parts, hands illustrating ow to do something, and many more. Similarly, table-tops, copying, lide and movie titles are now all within the increased range of any amera. It's easy to make a copy of that old family snapshot or to ake highly individual slide or movie titles by shooting travel folders,

CLOSE-UP (PORTRAIT) LENSE

ticket stubs. souvenirs, announcement cards, etc. The industri scientific applications are innumerable. Small parts, dental forma insect specimens are typical subjects. Close-up lenses can be use cameras having double-extension bellows or extension tubes to a a magnified image larger than the original subject. With cameras h ground glass focusing, wide angle effects are possible. In fact, a tographer equipped with a set of Tiffen Close-Up lenses is limit picture opportunities only by his imagination.

HOW TO USE THEM

The Tiffen Close-Up lens is attached to the camera lens by mean the standard Tiffen all-purpose adapter ring. It fits the adapter rin lens shade just like a filter, but being a lens, it is directional and m be positioned facing the proper way. All Tiffen Close-Up lenses have engraved arrow on the metal rim which must point TOWARD SUBJECT.

If your camera does not have ground glass focusing; consult tables supplied with each Close-Up Lens. The tables give the distan from the subject to the close-up lens and the corresponding setti for the focusing scale on the camera. Camera viewfinders were not d signed to work at such close distances and therefore are not accura Align the subject on the lens-to-film axis. The twin lens reflex came is particularly well suited for close-up work as one close-up lens m be attached to the taking lens and another to the viewing lens. Th all focusing and composition are both handled on the ground glass the usual way, except that the taking lens must be shifted to the exa position of the viewing lens, when shooting.

The Tiffen Close-Up lenses require no change in exposure. They m be used in combination with other close-up lenses (with a Tiffen R taining Ring) with the resultant strength being the sum of the t individual dioptar strengths. When using close-up lenses in combinatio always position the larger diopter strength closest to the camera len Close-up lenses may also be used together with any filter. Place t close-up lens next to the camera lens and the filter on the outsid Adjust exposure for only the filter in the usual way.

Best results are obtained in close-up photography by using a trip or other steady support. This helps maintain accurate subject-to-le measurements.

TIFFEN MINUS LENSES (−1, −2, −3, −4) increase the effective fo length of any lens to produce telephoto effects. Minus lenses may used on all cameras having a provision for both ground glass focusi and a means for extending the lens beyond normal range, such as tension tubes or double extension bellows. Best results are obtained using small diaphragm apertures. While the minus lenses require change in exposure, compensation must be made for the extra extensi of bellows or tube.

Tiffen® NEUTRAL

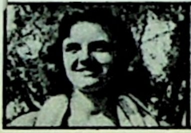
WHAT ARE THE NEUTRAL DENSITY FILTERS?

Basically, Neutral Density Filters are filters that reduce the amount of incident light they transmit by a given amount, **without changing the nherent quality of the light.** They can be used with color or black & white films, in still or cine work, and in combination with each other. These filters are "neutral" inasmuch as they transmit or absorb equal amounts of all the visible colors in the spectrum. They have as nearly as possible the same transmittance for every wavelength. An ideal neutral filter would be represented by a straight horizontal line on a transmission graph.

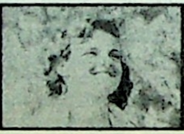
HOW NEUTRAL DENSITY FILTERS WORK FOR YOU

Controls Light For New Fast Film—The new high-speed films have given photographers undreamed-of versatility, especially in B&W photography. But the wide use of these fast films has introduced a new problem—the danger of overexposure. Today many cameras and lenses are incapable of oping with this new excess of light, and the result is often overexposure.

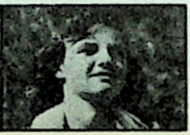
REDUCING DEPTH OF FIELD



Distracting background was produced by f/16 aperture needed for correct exposure of fast Tri-X film (1/250 sec.).



Opening lens to f/5.6 to throw background out of focus resulted in gross overexposure—at same shutter setting.



Subdued background, correct exposure were achieved at f/5.6, 1/250 sec., with a No. 2 and a No. 4 N.D. filter.

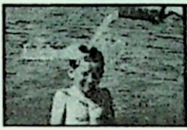
For example, if you have a camera with a complete range of exposure controls (shutters operating as fast as 1/500 sec. coupled to high-speed lenses that stop down no farther than f:22) and use the new high-speed film, you frequently find it impossible to avoid overexposure. When the shutter speeds and diaphragm settings on your camera are insufficient to make the proper exposure because the light is too bright, a Neutral Density Filter is the simple solution. This occurs particularly with the cameras that have shutter speeds up to only 1/100 or 1/200 and diaphragm settings down to f:6.3 N.D. Filters reduce the effective light without change of shutter speed or lens opening.

Valuable in Motion Picture Shooting—You usually find frequent need to stop down beyond the diaphragm range of the lens in shooting black & white movies, especially outdoors. Your exposure can be altered only through the use of the lens diaphragm, as any appreciable change in film speed (frames per second) affects animation. Here again, an N.D. Filter is your answer.

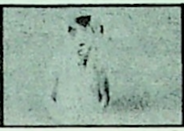
In Average Sunlight . . . when development is slightly extended to accommodate indoor exposures on the roll, or when there are reflections from snow, water, polished surfaces, etc.

DENSITY FILTERS

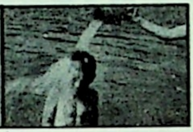
SLOWING DOWN THE SHUTTER



Water was frozen in an unrealistic pattern when subject was correctly exposed on Tri-X film—1/500 sec. at f/11.



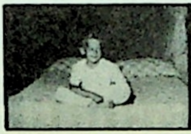
Slowing shutter speed to 1/50 sec. (at f/11) to produce realistic splash effect resulted in obvious overexposure.



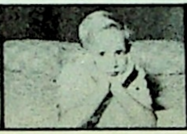
Correct exposure and acceptable portrayal of motion were achieved with No. 2 & 4 N.D. filters at 1/50 sec., f/11.

When Your Background Is Too Distracting—To assure more dominance of your subject and a more neutral background, use a N.D. filter with your lens opening as wide as possible. This diminishes the depth of field to its narrowest and throws the background out of focus.

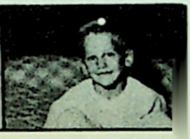
CONTROLLING FLASH BRILLIANCE



Subject was exposed with No. 5 lamp five feet away, lens stopped down to f/22, at 1/500 sec. — resulting in overexposure.



Correct flash exposure was obtained with No. 5 lamp, 10 feet from subject, with lens at f/16, shutter synched at 1/500.



Five-foot shot was correctly exposed under same conditions as shot above but with No. 2 and 4 N.D. filters in front of lens.

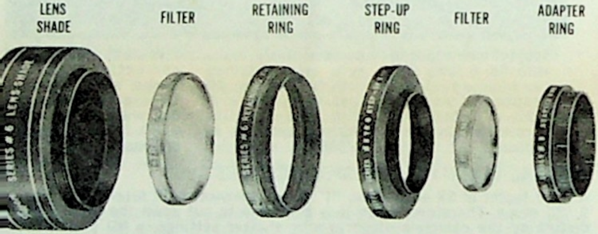
NEUTRAL DENSITY FILTER SPECIFICATIONS

A filter factor of 2X equals one "f" stop. Likewise, a 4X filter factor equals 2 "f" stops. Therefore, when it is desirable to cut down the light without disturbing the camera's diaphragm or shutter settings, a ND filter can be employed as an optical, rather than a mechanical, light transmission control. (Example: camera set at 1/100 sec. at f:22. If desired to reduce exposure by one stop, a filter factor of 2 is required, or an ND.6 filter as shown on the chart. If desired to cut by two stops, an ND.9 should be used).

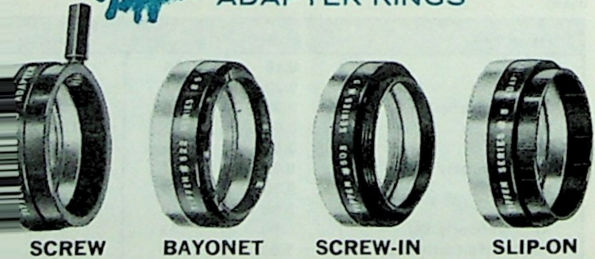
Tiffen Type	Density	% Light Transmission	Increase in stop
ND.1	0.10	80	⅔
ND.2	0.20	63	¾
ND.3 (Formerly X2)	0.30	50	1
ND.4	0.40	40	1.2
ND.5	0.50	32	1.6
ND.6 (Formerly X4)	0.60	25	2
ND.7	0.70	20	2.5
ND.8	0.80	16	3
ND.9 (Formerly X8)	0.90	13	4
ND. 1.0 (Formerly X10)	1.00	10	5

Tiffen® ANOLITE ADAPTER RINGS AND LENS SHADES

Regardless of the make of your camera, Tiffen has a Filter Adapter Ring that is specifically made for it. These adapter rings hold all your lens accessories, and are made in slip-on, set-screw, screw-in and bayonet types, depending on your individual preference and the characteristics of your lens mount. Tiffen Lens Shades, likewise, are scientifically contoured to match the angle of view of the lens, and eliminate all lare and extraneous light. All Tiffen Adapter Rings, ens Shades (or custom screw-in Lens Caps) are andsomely finished in optical black, with easy to ead white markings. They represent the finest luxury accessories for your camera.



Tiffen ADAPTER RINGS



CARE OF TIFFEN LENS ACCESSORIES

Tiffen Filters, because they are Thermo-bonded, need not be handle with the extraordinary care required by a gelatine or inferior laminate filter. Its structure is such that it has all the advantages of solid glas filters, but none of the disadvantages, such as poor color control, poo transmission control and fragility. When cleaning your filter, do no rub with any coarse abrasive material. Use lens tissue or a clean linen handkerchief. Do not immerse in solvents, though water immersion will not harm a Thermo-bonded filter. Your Tiffen Filter can be used in temperatures ranging from 170°F. to −100°F. (no wonder that Tiffen was chosen for the Antarctic Operation Deep Freeze!).

Anolite Accessories can be cleaned with any damp, soft, lint-free cloth. Do not use solvents. There is no danger of surface peeling, chipping or otherwise breaking-down, such as with flocked metal parts.

Leather Filter Safes should be cleaned with damp, clean cloth, an saddle soap or commercial leather cleaner.

ALL TIFFEN PRODUCTS ARE LIFETIME GUARANTEED!

FILM SPEED TABLE

Film speeds are, for all practical purposes, rated in ASA speeds. However, these are to be used as guides only, since certain development procedures can change the effective film speed in actual use.

	Day.	Tung.
ANSCO		
Hypan	40	32
Supreme	50	32
All-Weather Pan	64	32
Ultra Speed Pan	100	64
Superpan Press	125	80
Anscochrome Daylight	32	10●
Super Anscochrome Day.	100	40●
Anscochrome Flash (F)	20✦	16★
Anscochrome Tungsten	20■	32
Super Anscochrome Tungsten	80🌢	100
KODAK		
Panatomic X	25	20
Plus X	80	64
Verichrome Pan	80	64
Tri-X	200	160
Royal Pan	200	160
Kodachrome Daylight	10	5●
Kodachrome Flash (F)	10✦	10★
Kodachrome Type A	10■	16
Ektachrome Daylight	32	12●
Ektachrome Flash (F)	20✦	16★
Ektachrome Type B	6🌢	10
Kodacolor	32	25
Ektacolor Type B	5🌢	8

● with 80B
★ with photo floods and #82A filter
■ with #85 filter
✦ with #85C filter
🌢 with #85B filter

Tiffen® HANDY FILTER SELECTOR FOR COLOR FILMS

LIGHT SOURCE	EKTACHROME KODACHROME DAYLIGHT TYPE	KODACHROME TYPE A	Super Anscochrome TUNGSTEN, EKTACOLOR B, EKTACHROME B	KODACOLOR C	TYPE F COLOR FILMS	COMMERCIAL KODACHROME 16 MM	Super Anscochrome, Anscochrome Daylight	ANSCOCHROME TUNGSTEN 3400°K
Direct Sunlight, mid-day, nearby subject	Skylight 1-A	#85	#85-B	Skylight 1-A	#85-C	#83	#UV-15 or #UV-16	Conv. #11 or #85
Daylight darken blue sky eliminate unwanted glare, reflections	TIFFEN POLAROID® LIGHT POLARIZING FILTER							
Open Shade, Clear, nearby subject	Skylight 1-A, or #81	#85	#85-B	Skylight 1-A	#85-C	#83	#UV-15 or #UV-16	Conv. #11 or #85
Direct Sunlight, distant subject	Skylight 1-A, or #81	#85	#85-B	Skylight 1-A	#85-C	#83	#UV-15 or #UV-16	#11 or #85 plus #UV-16
Daylight, cloudy or overcast, nearby subject	Skylight 1-A, or #81	#85	#85-B plus Haze UV #2-A or #81	Skylight 1-A	#85-C	#83	#UV-15 or #UV-16	#11 or #85 plus #UV-16
Daylight, cloudy or overcast, distant subject	Haze #1 or Haze UV #2-A	#85	#85-B Plus #81 or #81-A	Haze #1 or Haze UV #2-A	#85-C	#83	#UV-16 or #UV-17	#11 or #85 plus #UV-16
Late afternoon, brilliant sun, Southern climate	80-C* or #82-A	#85 plus #82A	#85-B plus #82-A	No filter needed	#85-C plus #82-A	#83 plus #82-A	80-C* or #82-A	#11 or #85 plus #UV-16
Vistadome	CC 30R	#85 plus CC 30R	#85-B plus CC 30R	CC 30R	#85-C plus CC 30R	#83 plus CC 30R	CC 30R	#11 or #85 plus CC 30R

Photofloods (3400°K)	#80-B	No filter needed	#81-A	#82-A	#82-A	use mfg. recommendation	#80-B or Conv. #10	No filter needed
3200°K Lamps	#80-B plus #82-A	#82-A	No filter needed	#82-C	#82-C	use mfg. recommendation	#80-B or Conv. #10	#82-A
All Photoflash (except SM, SF & M2)	80-C*	#81-C or #81-D	#81-D	No filter needed	No filter needed	not recommended	80-C* or #1-D Flash	#UV-16
SM & SF Flash	not recommended	No filter needed	not recommended	#82-B	#82-B	not recommended	not recommended	No filter needed
High Speed Electronic Flash	#81-A	use mfg. recommendation	use mfg. recommendation	#85	not recommended	not recommended	#81-A or #UV-15	not recommended
M2 Flashlamps	not recommended	#81-EF	not recommended	No filter needed	#81	not recommended	not recommended	not recommended

FILMS	°K°	‘DM	FILMS	°K°	‘DM	FILMS	°K°	‘DM
EKTACHROME TYPE B	3200	31	ANSCOCHROME TUNGSTEN	3400	29	EKTACHROME DAYLIGHT	5400	18
EKTACOLOR TYPE B	3200	31	ANSCOCHROME TYPE F	3800	26	KODACHROME DAYLIGHT	5400	18
SUPER ANSCO TUNGSTEN	3200	31	EKTACHROME TYPE F	3800	26	ANSCOCHROME DAYLIGHT	6000	17
KODACHROME TYPE A	3400	29	KODACHROME TYPE F	3800	26	SUPER ANSCOCHROME DAYLIGHT	6000	17

*FORMERLY CALLED #2D FLASH °K° . . . KELVIN TEMPERATURE ‘DM . . . DECAMIRED VALUE

● EXPOSURE GUIDE FOR KODACHROME AND EKTACHROME FILMS ●

FILTERS	EXPOSURE INCREASE IN STOPS	FILTERS	EXPOSURE INCREASE IN STOPS	FILTERS	EXPOSURE INCREASE IN STOPS	FILTERS	EXPOSURE INCREASE IN STOPS	FILTERS	EXPOSURE INCREASE IN STOPS	FILTERS	EXPOSURE INCREASE IN STOPS	FILTERS	EXPOSURE INCREASE IN STOPS	FILTERS	EXPOSURE INCREASE IN STOPS
#81	1/3	#81-B	1/3	#81-D	2/3	#82-A	1/3	#82-C	2/3	#80-C*	1	#80-A	2	CC 30R	TOP WIND. 2-2/3
#81-A	1/3	#81-C	1/3	#81-EF	2/3	#82-B	2/3	#1-D	1/3	#80-B	2	Sky 1-A	NONE	CC 30R	SIDE WIND. 2

ANSCO COLOR FILM EXPOSURES : Requires No Exposure Increase with Conversion # 11 & 12, or UV-15, 16 & 17. On Conversion #10, increase exposure by 4X.

NOTE: Above recommendations are for general use, under average conditions. For effects that are more pleasing or desirable, use cooler or warmer filters at your own discretion.

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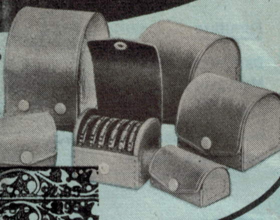
NOTE: The TIFFEN POLAROID FILTER is the only filter that will darken a blue sky, without affecting flesh tones or other surrounding colors.

SUBJECT MATTER	RECOM-MENDED FILTER	EFFECT
General	Green 1	Natural color rendition
Portraits	Green 1	Improved skin tones, eliminates chalkiness
Portraits, with skin blemishes, ars, freckles	Yellow 1 Yellow 2 Orange	Reduces contrast between blemishes and other skin tones.
	Green 1	Accents blemishes strong details, as for use in clinical photography.
ng Photographs	Polaroid® Polarizer	Eliminates reflections, increases detail and contrast.
Yellowed, faded prints	Yellow 2	Considerably freshened print
Blueprints	Red 1	Strongly contrasting print, good detail.
Glass objects, others of similar texture, like pottery, china, tile	Polaroid® Polarizer	Better detail and texture as reflections are eliminated.
	Filter of complementary color	Increase contrast to show design, patterns, detail.
Upholstered furniture, draperies, fabric, clothing, etc.	Filter of complementary color	Increase contrast to show pattern, texture, weave, or indicate color contrasts.
In dark colors	Filter of same color	Lightens tone to show greater detail, texture.

Polaroid® Polaroid Corp.

SUBJECT MATTER	RECOMMENDED FILTER	EFFECT
Furniture Dark woods like Mahogany	Red 1	Best shows wood grain pattern
Yellow woods like oak, maple, walnut	Orange	Best shows wood grain pattern
Light, blond finishes	Yellow 1 or 2	Sufficient contrast for grain, strengthens effect of light woods.
Plastics, leather, wrought iron, brass	Polaroid® Polarizer and filter of same color	Better details. Lighten tones to accent metal parts, better detail in upholstery.
Any polished surface, waxed floors, formica, tile, etc.	Polaroid	Eliminates reflections, permits detail
Printed signs, display pieces, etc.	Filter of complementary color to any lettering	Increased contrast to show detail, make legible.
Floral display	Green 1	Will lighten foliage to accent flowers
	Filter closest to color of flower	Lighten flower, gives impression of brightness in contrast to dark foliage.
Marine scenes, boats, beach	Orange	Darkens water
	Yellow 2	Natural rendition

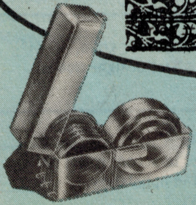
FOR THE LIFE OF YOUR FILTER
USE *Tiffen*® FILTER SAFES®



LEATHER FILTER SAFES

Sturdy, handsome leather safe holds up to six filters in individual, protective, dust-free sections. Snap-closure for added protection, instant accessibility. Filter color on rim easily readable for immediate selection.

[redacted]

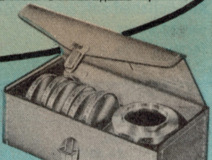


PUSH THE BUTTON, AND THE FILTER POPS UP READY FOR USE

SELECT-A® FILTER SAFES

The most convenient case for your filter accessories — in sturdy, transparent plastic. Revolutionary push-button filter selector eliminates digging, straining, groping for filters. Filters are held snugly—can't rattle or scratch. Handy loop for camera strap.

[redacted]



COMBINATION LEATHER FILTER SAFES

Handsome top-grain cowhide leather filter case holds up to 7 filters, plus Tiffen square or round lens shades and adapter ring. Saddle stitched and smudgeproof coated, safe, durable. Contains filter factor chart for all films and handy loop for camera strap.

[redacted]

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CONTENTS OF THIS MANUAL ARE INTENDED AS A GENERAL GUIDE TO THE USE OF FILTERS AND LENS ACCESSORIES. BECAUSE MUCH OF THIS INFORMATION IS BASED ON FILM AND LAMP MANUFACTURERS' RECOMMENDATIONS, THE PUBLISHER ASSUMES NO RESPONSIBILITY FOR ERROR.

TIFFEN MARKETING CO., ROSLYN HEIGHTS, L. I., N. Y.